CLAIMS

A1 Sub

1. A method of thawing frozen food in a microwave oven (1) comprising a microwave source (3), an oven cavity (2), and a control unit (5), the weight of the foodstuff being in a range from a lower weight, which is 0.1-0.2 kg, to a limit weight, which is 0.4-0.6 kg, which method comprises the steps of

providing the control unit (5) with an input signal containing information about the weight of the foodstuff, for controlling the thawing;

the control unit causing the microwave source to feed microwaves having an average power of more than 400 W, preferably more than 600 W, and advantageously more than 800 W, into the oven cavity (2) during a first time interval (9, 13) during which the total microwave energy supplied to the oven cavity exceeds 50 J per gram of food, preferably exceeds 80 J per gram of food, and advantageously exceeds 120 J per gram of food;

the control unit causing the microwave source to be shut off during a waiting period subsequent to the first time interval; and

the control unit causing the microwave source to feed microwaves, having an average power of more than 400 W, preferably more than 600 W, and advantageously more than 800 W, into the oven cavity during a second time interval (12, 16) during which the total microwave energy supplied to the oven cavity exceeds 40 J per gram of food, preferably exceeds 60 J per gram of food, and advantageously exceeds 90 J per gram of food.

A2 Sub

2. ~~A method of processing~~ frozen food in a microwave oven (1) comprising a microwave source (3), an oven cavity (2), and a control unit (5), the weight of the

foodstuff being in a range from a lower weight, which is 0.1-0.2 kg, to a limit weight, which is 0.4-0.6 kg, which method comprises the steps of

providing the control unit (5) with an input signal containing information about the weight of the foodstuff, for controlling the processing;

the control unit causing the microwave source (3) to feed microwaves, having an average power of more than 400 W, preferably more than 600 W, and advantageously more than 800 W, into the oven cavity during a first time interval (9, 13);

the control unit causing the microwave source (3) to be shut off during a waiting period; and

the control unit causing the microwave source to feed microwaves, having an average power of more than 400 W, preferably more than 600 W, and advantageously more than 800 W, into the oven cavity during a first time interval (17) during which the total microwave energy supplied to the oven cavity exceeds 50 J per gram of food, preferably exceeds 80 J per gram of food, and advantageously exceeds 120 J per gram of food;

A3 Sub

3. A method of thawing frozen food in a microwave oven (1) comprising a microwave source (3), an oven cavity (2), and a control unit (5), the weight of the foodstuff exceeding a limit weight in the range 0.4-0.6 kg, which method comprises the steps of

providing the control unit (5) with an input signal containing information about the weight of the foodstuff, for controlling the thawing;

the control unit causing the microwave source to feed microwaves, having an average power of more than 400 W, preferably more than 600 W, and advantageously

more than 800 W, into the oven cavity during a first time interval (17) during which the total microwave energy supplied to the oven cavity exceeds 50 J per gram of food, preferably exceeds 80 J per gram of food, and advantageously exceeds 120 J per gram of food;

the microwave oven emitting a turning signal at the end of the first time interval, indicating that the foodstuff should be turned over;

the control unit causing, subsequent to the first time interval, the microwave source to be shut off during a waiting period, during which the control unit detects that the foodstuff has been turned over; and

the control unit subsequently causing the microwave source to feed microwaves, having an average power of more than 400 W, preferably more than 600 W, and advantageously more than 800 W, into the oven cavity during a second time interval (20) during which the total microwave energy supplied to the oven cavity exceeds 40 J per gram of food, preferably exceeds 60 J per gram of food, and advantageously exceeds 90 J per gram of food.

AM Sub

4. A method according to claim 1 or 2, c h a r a c t e r i s e d by the additional steps of

the microwave oven (1) emitting a turning signal at the end of the first time interval, indicating that the foodstuff should be turned over; and

the control unit (5) detecting during the waiting period whether the foodstuff has been turned over, the microwave source (3) feeding microwaves into the oven cavity (2) during the second time interval depending upon whether the foodstuff has been turned over.

A5 Sub

5. A method according to claim 3 or 4, c h a r a c t e r i s e d in that the second time interval begins at the time of the first of the following occurrences:

the time from the emission of the turning signal is longer than a predetermined waiting period, or

the control unit receives a signal indicating that the foodstuff has been turned over.

A6 Sub

6. A method according to any one of the preceding claims,

c h a r a c t e r i s e d in that the first time interval is longer than the second time interval.

A7 Sub

7. A method according to any one of the preceding claims,

c h a r a c t e r i s e d by

feeding continuous and preferably maximum microwave energy into the oven cavity during the first and the second time intervals.

A8 Sub

8. A method according to any one of the preceding claims,

c h a r a c t e r i s e d by the steps of

providing the control unit (5) with an input signal containing information about the type of foodstuff; and

the control unit also controlling the length of the first and the second time intervals depending upon the type of foodstuff.

A9 Sub

9. A method according to any one of the preceding claims,

c h a r a c t e r i s e d by rotating the foodstuff when microwave energy is fed from the microwave source.

A10 Sub

10. A method according to claim 1, c h a r a c t e r i s e d in that the foodstuff is animal;

that the total microwave energy supplied during the first time interval (9, 13) is 110-160 J/g of food and preferably is 120-150 J/g of food; and

that the total microwave energy supplied during the second time interval (12, 16) is 90-130 J/g of food and preferably is 100-120 J/g of food.

A11 Sub

11. A method according to claim 3, c h a r a c t e r i s e d in that the foodstuff is animal;

that the total microwave energy supplied during the first time interval (17) is 110-190 J/g of food and preferably is 120-180 J/g of food; and

that the total microwave energy supplied during the second time interval (20) is 40-80 J/g of food and preferably is 50-70 J/g of food.

A12 Sub

12. A method according to claim 1, c h a r a c t e r i s e d in that the foodstuff is vegetable;

that the total microwave energy supplied during the first time interval (9, 13) is 140-170 J/g of food and preferably is 150-160 J/g of food; and

that the total microwave energy supplied during the second time interval (12, 16) is 110-140 J/g of food and preferably is 120-130 J/g of food.

A13 Sub

13. A method according to claim 3, c h a r a c t e r i s e d in that the foodstuff is vegetable;

that the total microwave energy supplied during the first time interval (9, 13) is 160-240 J/g of food and preferably is 180-220 J/g of food; and

that the total microwave energy supplied during the second time interval (12, 16) is 50-90 J/g of food and preferably is 60-80 J/g of food.

A14 Sub

14. A microwave oven for thawing food, which microwave oven (1) comprises a microwave source (3) for generating microwaves,

an oven cavity (2),

input means (4) for an input signal containing information about the food,

a control unit (5) for controlling the microwave source, which control unit is connected to the input means, which microwave oven is characterised in that the control unit is adapted

to calculate the lengths of a first and a second time interval on the basis of the input signal;

to cause the microwave source to feed microwaves into the oven cavity during the first time interval (9, 13, 17) at an average power of more than 400 W, preferably more than 600 W, and advantageously more than 800 W, and with a total energy which exceeds 50 J per gram of food, preferably exceeds 80 J per gram of food, and advantageously exceeds 120 J per gram of food;

to cause the microwave source to be shut off during a waiting period; and

to cause the microwave source to feed microwaves into the oven cavity during the second time interval (12, 16, 20), at an average power of more than 400 W, preferably more than 600 W, and advantageously more than 800 W, and with a total energy which exceeds 40 J per gram of food, preferably exceeds 60 J per gram of food, and advantageously exceeds 90 J per gram of food.

AB Sub

15. A microwave oven according to claim 14, characterised in that the microwave oven is adapted

to emit a turning signal at the end of the first time interval, containing information indicating that the foodstuff should be turned over; and

to detect whether the foodstuff has been turned over during the waiting period.

A16 Sub

16. A microwave oven according to claim 14 or 15, c h a r a c t e r i s e d in that said input means is provided with one entry for the weight of the foodstuff and one entry for the type of food.

A17 Sub

17. A microwave oven according to claim 14, 15 or 16, c h a r a c t e r i s e d in that it also comprises a rotary plate for rotating the foodstuff in the load zone.

A18 Sub

18. A microwave oven according to claim 14, 15, 16, or 17, c h a r a c t e r i s e d in that the control unit is adapted to cause the microwave source to feed microwave energy into the oven cavity during the first and the second time intervals only when the weight of the foodstuff is in a range from a lower weight, which is 0.1-0.2 kg, to a limit weight, which is 0.4-0.6 kg.

A19 Sub

19. A microwave oven according to claims 14-18, c h a r a c t e r i s e d in that the control unit is adapted to cause the microwave source to feed microwaves into the oven cavity during a third time inteval (22) subsequent to a second waiting period when the weight of the foodstuff exceeds a limit weight in the range 0.4-0.6 kg.

A20 Sub

20. A microwave oven according to claims 14-18, c h a r a c t e r i s e d in that, when the weight of the foodstuff is in a range from a lower weight, which is 0.1-0.2 kg, to a limit weight, which is 0.4-0.6 kg, the microwave oven is adapted to emit a sufficient amount of microwave energy to essentially thaw the foodstuff in less than 1 minute per 100 g of food from the beginning of the first time interval.

A21 Sub

21. A microwave oven according to claims 14-20, c h a r a c t e r i s e d in that the oven cavity has an upwardly decreasing horizontal cross-section in relation to its bottom cross-section at least in the upper part of the cavity, so that a uniform distribution of the electric field in the cavity is obtained.

A22 Sub

22. A microwave oven according to claims 14-21, c h a r a c t e r i s e d in that the oven cavity (2) has a side wall (23) which slopes inward at least at the top (24).

A23 Sub

23. A microwave oven according to claims 14-22, c h a r a c t e r i s e d in that it is provided with a waveguide device (27) for feeding microwave energy from the microwave source to the oven cavity through at least two feed openings (7) located at a distance from each other, which waveguide device is dimensioned for providing a certain amount of internal reflection, a resonance state being achieved in the waveguide device for microwaves generated by the microwave source, the waveguide device having a predetermined quality factor which is higher than a quality factor of the oven cavity for any given current.

A24 Sub

24. A method of processing frozen food in the oven cavity of a microwave oven by means of microwaves supplied to the oven cavity, which method comprises the steps of

feeding microwaves into the oven cavity at essentially full continuous power during a first time interval (9, 13, 17);

interrupting the feeding of microwaves during a waiting period, subsequent to the first time interval;

feeding microwaves into the oven cavity at essentially full continuous power during a second time interval (12, 16, 20), subsequent to the waiting period, the duration of the second time interval being greater than 1/3, preferably greater than 1/2, of the duration of the first time interval, so that the food will be thawed at least to an essential degree by the end of the second time interval.

A25 Sub

25. A method according to claim 24, c h a r a c t e r i s e d by the additional steps of

emitting a turning signal at the end of the first time interval, indicating that the foodstuff should be turned over; and

detecting that foodstuff has been turned over and shortening the waiting period by immediately beginning the second time interval.

26. A method according to claim 24 or 25, characterised in that the weight of the foodstuff is in a range from a lower weight, which is 0.1-0.2 kg, to the limit weight, which is 0.4-0.6 kg; and

that the energy supplied during the second time interval (12, 16) is at least about 70% and preferably at least 80% of the energy supplied during the first time interval (9, 13).

27. A method according to claim 26, characterised in that no additional microwave energy is supplied to the oven cavity subsequent to the second time interval (12, 16).

28. A method according to claim 26 or 27, characterised in that the total duration of the first time interval, the waiting period, and the second time interval is less than about 1 minute per 0.1 kg of food.

29. A method according to any one of claims 26-28, characterised in

that the microwave power supplied to the oven cavity is at least 400 W, preferably at least 600 W, and most preferably 800 W;

that the total microwave energy supplied to the oven cavity during the first time interval exceeds 50 J per gram of food, preferably exceeds 80 J per gram of food, and advantageously exceeds 120 J per gram of food; and

that the total microwave energy supplied to the oven cavity during the first time interval exceeds 40 J per gram of food, preferably exceeds 60 J per gram of food, and advantageously exceeds 90 J per gram of food.

30. A method according to claim 25, c h a r a c t e r i s e d in that the weight of the foodstuff is greater than a limit weight which is 0.4-0.6 kg;

that the energy supplied during the second time interval is at least about 40%, preferably at least 50% of the energy supplied during the first time interval;

that the second time interval is followed by a second waiting period; and

that, during a third time interval subsequent thereto, microwaves are fed into the oven cavity at reduced average power for final thawing of the food.

A30 Sub 31. A method according to claim 30, c h a r a c t e r i s e d in that the energy supplied during the third time interval is less than about 25%, preferably less than 20% of the total energy supplied.

A31 Sub 32. A method according to claim 30 or 31, c h a r a c t e r i s e d in that the average power of the microwaves supplied to the oven cavity during the third time interval is at least lower than 400 W.

A32 Sub 33. A method according to any one of claims 30-32, c h a r a c t e r i s e d in

that the microwave power supplied to the oven cavity during the first and the second time intervals is at least 400 W, preferably at least 600 W, and most preferably at least 800 W;

that the total microwave energy supplied to the oven cavity during the first time interval exceeds 50 J per gram of food, preferably exceeds 80 J per gram of food, and advantageously exceeds 120 J per gram of food, and

that the total microwave energy supplied to the oven cavity during the first time interval exceeds 40 J per gram of food, preferably exceeds 60 J per gram of food, and advantageously exceeds 90 J per gram of food.

A33 Sub 34. A method according to any one of claims 30-33, characterised in that the waiting time of the second waiting period depends on the weight of the food.